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## THE QUANTITY THEORY SCRUTINIZED

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The quantity theory of the value of money is now widely accepted. Nevertheless, a number of earnest students still decline to indorse it, and its mastery over its competitor is not complete unless all issues between the two have been decided in its favor. The present paper has the object of comparing the validity of the two theories that account for the value of money.

According to the quantity theory, the value of money is regulated by the supply of and the demand for money. An increase of the supply of money as well as a reduction of the demand for it is followed by a lowering of its value, manifested by a rise of the general price level, and vice versa. In the "supply of money" is embraced all of our medium of exchange that is freely used in the market and generally accepted in payment for goods delivered and services rendered. It comprises, not only all of our currency in actual circulation, but also all deposit currency, that is, depositors' bank accounts subject to check. The "demand for money" is measured by the volume of trade, that is, by the sum total of goods and services sold during a certain period, say one year.

Two forms of demonstration are offered for this law. The one is a process of mathematical deduction that will be discussed below. The other consists in showing from history that a rise of prices has invariably attended an increase in the quantity of currency, and vice versa.

With this theory goes the theory that the interest paid for a loan of money is really a payment for the advantages afforded by the use of the capital that can be bought with the borrowed money. There is still some disagreement on the cause to which the power of invested capital to return interest should be attributed. Some authorities trace this power to the final productivity of capital used in the industries, while others attribute it to the marginal preference of present over future goods, or the service rendered by "waiting," that is, by a person's abstinence from consuming after producing

wealth and permitting another person to consume before producing it.

According to the bullion or commodity theory—the rival of the quantity theory—money is a valuable thing used as a medium of exchange, the value of which depends entirely upon the market value of the thing so used. In the case of credit-money the valuable thing is replaced by valuable credit, consisting of promissory notes or evidences of indebtedness, the value of which depends primarily on the goods promised by the debtor. The dollar, in terms of which the promises are expressed, is conceived as 25.8 grains of gold, 9/10 fine, and the law of supply and demand enters the problem only in its application to the purchasing power of gold as a merchandise.

The most rational conception of the process through which evidences of indebtedness acquire value is that of viewing the creditor as being in possession of a contingent right against the property of the debtor that makes him virtually a joint owner to the extent of the debt. The property of the debtor is to that extent involved in the promise. Inasmuch as the property of a debtor is virtually pledged for the redemption of his debts, it is not unreasonable to view the creditor's right as a right of joint ownership in that property. A debtor is the owner only of the value of his possessions minus his debts, hence that share of his possessions which he does not own must belong to someone else, and who else can that someone be but his creditor?

This conception is particularly applicable to our medium of exchange. Our Federal Reserve currency is secured principally by commercial paper consisting of acknowledgements of debts on the part of business men or corporations. And since the holder of Reserve currency is a creditor, it is quite proper to consider him, together with the holders of the other notes issued by the same bank, as joint owner of the wealth possessed by the debtors whose promises to pay form the security on which the Reserve notes were issued.

The same relation exists between the depositors of a deposit bank and those whose notes the bank discounted, for the bulk of

the assets of a deposit bank, on which its "credit" rests, consists of its claims against those who are indebted to it.

The possessions of the debtor are really the substance, or tangible wealth, that imparts value to the credit instrument, and since that share of those possessions that is owned by the creditor is expressed in terms of dollars, its value remains at par with gold, provided the debtor is solvent. The advocates of the commodity theory justify on this ground their assertion that all money, even credit money, consists of valuable things used as a medium of exchange, the only difference between commodity money and credit money being that in the one case the things themselves—the gold coins—in the other only the right of ownership to the things, pass from hand to hand as the currency circulates. The substance of credit currency is in possession of the respective debtors who, though possessing it, do not own it.

Whenever the debtor of a currency system cannot or will not honor the promise, the value of the promise falls below par to an extent inversely corresponding to the prospect of a restoration of the debtor's ability to pay, or, in case of a government issue, of an early resumption of "specie payment."

Some of the advocates of the commodity theory, in denying that the purchasing power of the dollar is related to the quantity of money in use, maintain that a direct relation exists between this quantity and the current rate of interest. Just as an insufficient or an excessive supply of a commodity raises or depresses its market value, or as, conversely, an increase or a reduction of the price at which it is offered for sale tends to reduce or increase the amount of it that will be sold, so will, they aver, a deficiency or an abundance of the supply of money, in relation to the demand for it, raise or lower the interest rate, or, conversely, an increase or a reduction of the discount rate will tend to reduce or increase the call for loans.

It is, however, not denied that the value of gold, and with it the purchasing power of the dollar, is affected by the amount of gold that is diverted from the industrial market and used for monetary purposes, either by coinage or by holding it in treasuries

as reserve; but an increase of money due to a diversion of gold from the industrial market has the tendency to increase, not to reduce, the value of the dollar.

With these statements before us a rational comparison of the two theories can readily be instituted.

The alleged mathematical demonstration of the quantity theory is based upon the self-evident truth that the flow of trade, comprising the sale of goods and services, and the flow of money applied to their payment, must in the nature of things be equal. In the formula representing this equation the flow of trade in terms of dollars may be designated by the product  $T \times P$ , where  $T$  represents the quantity of goods and services sold, and  $P$  the price level at which they are sold. The monetary flow is designated by  $M \times V + C \times V'$ , where  $M$  is the volume of circulating currency,  $R$  the average rapidity of its circulation,  $C$  the volume of bank credit subject to check, or deposit currency, and  $V'$  the mean velocity of its turnover. The equation then appears in this form:

$$T \times P = M \times V + C \times V'.$$

To be sure, in accepting this equation, the quantities  $T$ ,  $V$ , and  $V'$  must be properly circumscribed. From the sum  $T$  must be excluded all those sales that are not paid for by money or by check, but are balanced against contra accounts or are not paid for at all. And in computing the rapidity of circulation, only those transfers of money and bank credits must be counted that are in the nature of payments for goods or services delivered. All secondary transfers of checks in the process of bank clearing, as well as transfers of money in the process of making or paying loans, as well as payments of interest and dividends, must be excluded.

With these qualifications the equation of societary circulation is unquestionably true, and the quantity theory is deduced from the equation by the following reasoning: It is postulated that both the volume of trade  $T$  and the rapidity of circulation designated by  $V$  and  $V'$  are independent of any change in the volume of currency, and that for this reason the terms  $P$ ,  $M$ , and  $C$  are the only quantities that are mutually related. If, then, the factors  $M$  and  $C$  vary, the equation can remain satisfied only if the factor  $P$  varies in proportion.

However, the assumed postulate is open to dispute, for many of the advocates of the commodity theory contend that an inadequacy of the medium of exchange impedes trade and causes it to lag behind the productive capacity of the industries. By assuming the volume of trade to be independent of the volume of money, the quantity theory is assumed to be true by postulate. This is known as "reasoning in a circle."

It is universally admitted that in the modern system of production by specialized trades, in which the products of industry must be transferred from the producer to the consumer by process of exchange, these exchanges would be impossible in the absence of a special medium of exchange, since pure barter is out of the question. It is therefore reasonable to conclude that inadequacy of currency is an impediment to commerce, and this inference is brushed aside by postulating that the volume of trade is independent of the quantity of money in use.

The postulate may also be contested on the ground of facts. In the light of the quantity theory an inadequacy of money would be inconceivable, since any change in the quantity of money would at once be compensated by an inverse change in the value of the dollar, and monetary crises would be impossible. But the fact that there were such crises in the past, that there were periods of money stringency, proves that a deficiency of currency is not only possible but that it has frequently been experienced. The attempt to prove the quantity theory by mathematics is decidedly a failure.

But even though the deductive demonstration of that theory be rejected, the facts recorded by history are claimed to constitute an irrefutable proof. The discovery of America was followed by a material influx of gold and silver into the European markets and a simultaneous rise of prices. Every discovery of a prolific gold field caused prices to rise still higher. The almost unlimited issue of the assignats and the mandates of the French Revolution was attended by an unprecedented rise of prices, and so have prices risen lately in Russia, Germany, and Austria in consequence, it is said, of the unbridled inflation of the currencies of those countries.

However, there is another side to this line of reasoning. A theory is not considered confirmed by some facts if not all facts coming within its province conform to it. When, through the

stimulated industrial activities during the late war, the demand for money was enormously increased, as manifested by the marketing of the several Liberty Loans, prices did not decline as they should have done if the value of money were increased by an increased demand for it.

And furthermore, the fact that before the late war the rate of exchange as regards the several units of value, the dollar, the pound, the franc, the mark, etc., remained stationary, barring very slight variations that could readily be accounted for, was inconsistent with the quantity theory, according to which more violent variations could have been prevented only by an agreement among the respective nations regarding the amount of money issued by each, and such agreement did not exist. The reason why at present the former rate of exchange of these various units is not maintained will be discussed below.

These and other experiences militating against the quantity theory are ignored by its advocates on the plea that the approximate coincidence of variations of the price level with the varying quantity of money, which can be traced back for centuries, is an invincible defense of their theory. However, even this plea is of no avail, for this approximate conformity can be explained on other grounds.

The present currency laws of all industrial countries are formulated so that the amount of money in circulation depends in a certain measure upon the amount of gold held by the banks. Any addition of gold to the stores of the Federal Reserve banks of this country permits an increase of the Reserve currency. Any addition of gold to the reserves of a national bank entitles that bank to an increase of its deposit currency. It follows that the quantity of money is in a measure related to the quantity of gold on hand. This reasoning applies no doubt more accurately to our former currency system and to pre-war conditions. During the last several years the price movements and those of the currency volume did not keep together as closely as former observations show, and this is readily accounted for by the fact that in our new currency system the amount of gold on hand has less influence on the amount of money in use.

The amount of gold in the market also affects the purchasing power of the metal, hence an increase of the store of gold is attended, not only by an increase of the quantity of money, but also by a rise of the price level, and the approximate conformity of the two curves—one representing the fluctuations of the price level, the other the variations of the amount of money in use—can be accounted for by those of our laws that link the quantity of money in use in a measure to the amount of gold on hand.

With this explanation of the observed facts the last stronghold of the quantity theory falls to the ground, and the only reasonable explanation of the value of money is that of the bullion theory, according to which the value of the dollar equals the purchasing power of 25.8 grains of the metal gold.

Some phenomena observed in the use of credit money deserve further analysis. Credit currency consists of promises to pay gold, and so long as these promises are fully secured and are collectible, the outstanding number of such promises can affect neither the value of gold nor the price level in the sense predicated by the quantity theory. The rise of the price level within the last few years cannot therefore be ascribed to what has been called "inflation," and the supposition that business is now suffering from a lack of money is not unreasonable. The correct interpretation of the equation of societary circulation is this. The quantities  $T$  and eventually  $V$  and  $V'$  are governed by the terms  $M$  and  $C$ . Business stagnation and unemployment can be traced to those of our laws that impede the issue of our currency, a policy that has been justified only by the erroneous assumption that an increase of currency will raise the price level. Instead, an increase of sound currency would permit an expansion of trade and a revival of business, and should the currency issued ever exceed the amount required by the full capacity of our industries, a reduction of the terms  $V$  and  $V'$  would automatically ensue and the equation would remain satisfied.

It is sometimes argued that there can be no scarcity of currency, since deposit currency rises exactly with the work to be done. But, as a matter of fact, it happens continually that customers of a



bank are refused credit, not because the security they offer is questioned, but because the funds of the bank are low, though the bank may not give that as a reason for the refusal for fear of hurting its own reputation. Moreover, in the present state of business the enormously high interest rates forbid the borrowing of money where the investment might clear from 2 to 6 per cent, hence deposit currency will not adapt itself to the work to be done.

Besides, our banking laws, requiring banks to maintain a certain reserve in legal tender, render it impossible for the deposit currency to expand beyond a certain multiple of the currency held in banks as reserve. The various qualifications of the laws on bank reserves make it difficult to estimate this factor, but assuming the mean ratio below which the total of cash reserves held by deposit and Reserve banks may not be reduced to be 8 per cent of the total deposit currency, bank deposits cannot exceed twelve and one-half times the money held as bank reserves. And since our legal-tender currency, which alone can be counted as reserve in National banks, is limited, a limit is put on the expansion of deposit currency which prevents this currency from adapting itself to the needs of the industrial world.

An expansion of the Reserve currency is practically restricted to two and one-half times the amount of gold held in the vaults of the Reserve banks by the 40 per cent gold reserve requirement of our laws.

Indeed, I can see no possible explanation for general unemployment other than the inadequacy of currency which is inevitable under our present banking laws, as can readily be explained.

Currency can be brought into circulation only through the process of borrowing, hence the business world is unavoidably indebted to the banks to the extent of all the deposit currency and bank notes in use. This applies to deposit currency, for this currency is created through the process of discounting promissory notes. Any payment of these debts involves an equal reduction of the money in use, for there is no other source of currency. So long as currency is needed for carrying on business, these debts must persist.

But also the interest payments must be made with currency, and the money so withdrawn can be restored to circulation in only

two ways: (1) by the recipients spending it in the market, either on personal accounts or by investing it as capital, as by buying stocks, or houses to be rented, etc.; or (2) by offering it for loans. Which of the two ways is selected is optional with the recipients of the interest and out of control of the business world. It should here be remembered that the bulk of interest payments is received by the very rich who can afford to, and do, hold money for lending.

Every return of money to circulation in the second way increases the indebtedness of the business world, which implies an increase of its obligation to pay interest. Hence this increase of indebtedness over the amount of money in circulation proceeds in a geometric ratio and has done so in the past.

It is therefore not only impossible for the business world ever to discharge its debts but these increase with ever increasing rapidity. A periodic breakdown of business cannot be avoided, for a time must come when those needing the money can no longer afford to borrow more, and money will accumulate in banks, involving a reduction of the money in circulation.

The sum total of debts on which interest must be paid amounts to probably more than four times the amount of currency in use, inclusive of deposit currency (I do not know where to obtain reliable and complete statistics on this subject), hence the yearly interest payments absorb more than one quarter of all currency. The bulk of these payments going to the very rich, and there being no way of compelling these monies to be returned to circulation in the first way, the business world must submit to one of two evils: either a continually increasing indebtedness that can never be canceled, or a reduction of the money in circulation. The first cannot continue indefinitely, and the second causes a depression of business. These are the conditions of today, and I can see no relief except by a reduction of the rate of interest so that the first way of returning interest money to circulation predominates, and the reduction of debts through insolvencies exceeds the creation of new debts through the second way.

An increase of sound currency would at once relieve stagnation. In the same way in which the Reserve banks not so very long ago raised their discount rates with the view of impeding the issue of more currency, or, "putting a stop to inflation," so they would

have it in their power to reduce the discount rate and issue more currency, but for the 40 per cent gold proviso of the law.

Since much of the capital of this country now lies idle, the final productivity of capital is now far below the prevailing high interest rate which cannot therefore be attributed to anything but those laws and policies that impede the issue of more currency.

In a country in which currency is increased by an insolvent issuer, prices do rise in consequence, but such rise of prices is to be traced to the issuer's insolvency. This is true whether the issuer be the government or a bank authorized to emit currency. By an increased issue of notes the nominal debt is increased without a corresponding increase of the issuer's resources, hence the value of the notes naturally declines with every increase of the notes. And if those notes become the commercial medium of exchange, the value of any one of the discredited and therefore depreciated promises to pay a unit (in gold) becomes the current unit of account, and such debasement of the unit is naturally attended by a corresponding rise of prices. In this event the quantity theory seems to be realized. In Russia, Austria, and Germany prices did indeed rise practically in the same ratio in which the notes in circulation were increased.

However, even this experience does not constitute a confirmation of the quantity theory. When money is conceived as a valuable thing employed as a medium of exchange, the quantity of money is not increased by a mere multiplication of the evidences of debt without an increase of the resources available for honoring the promises, which resources are the real substance of the money. An increase of notes by an insolvent debtor causes a rise of prices, even though the quantity of money, measured by the resources available for the redemption of the notes, is not increased. Under reasonable conceptions of terms the quantity theory is not even confirmed by the rise of prices occasioned by an increase of currency that can properly be called "inflation."

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